CLAIMS

WHAT IS CLAIMED IS:

1. A method of promoting the healing of a wound disposed in soft tissue and having a physical extent, comprising the steps of:

providing control circuitry to control the application of electrical current through a plurality of electrodes;

applying three or more electrodes to the surface of the soft tissue around and in proximity to the wound, wherein each of the three or more electrodes is connected to the control circuitry;

conducting an electrical current through the three or more electrodes, such that one electrode functions as a current source and one or more of the remaining electrodes functions as a current sink; and

switching the function of acting as a current source and as a current sink among the electrodes.

2. The method of claim 1, wherein the step of switching proceeds in a sequence rotationally around the wound.

3. The method of claim 1, wherein during the conducting step all remaining electrodes function as current sinks, and one or more of the remaining electrodes is connected to ground through an electrical resistance.

4. The method of claim 1, wherein during the conducting step all electrodes functioning as current sinks are placed in series with electrical resistances set in the control circuitry, such that an electrical current flows into the physical extent of the wound.

5. The method of claim 4, wherein the control circuitry is capable of measuring the electrical impedance between the electrode functioning as the current source and the one or more electrodes functioning as current sinks, and the measured electrical impedance is used to adjust the electrical resistances.

6. The method of claim 1, comprising the further step of applying a distal electrode to soft tissue remote from the proximate physical extent of the wound, wherein the distal electrode is connected to the control circuitry.

7. The method of claim 6, wherein the remote soft tissue is on the opposite side of the body as the physical extent of the wound.

8. The method of claim 6, wherein the distal electrode functions as a current sink.

9. The method of claim 6, wherein the switching is controlled to cause an electrical current to move helically into the physical extent of the wound.

10. The method of claim 1, comprising the further steps of detecting the healing of the wound from electrical impedance measurement, and adjusting the pattern of stimulation as the wound heals to optimize healing.

11. The method of claim 1, wherein the control circuitry is capable of measuring an electrical impedance value between the electrode functioning as the current source and the one or more electrodes functioning as current sinks, and further comprising the steps of repeating the applying, conducting, and switching steps in more than one treatment session, measuring an electrical impedance value in each treatment session, storing the measured impedance value, and calculating a healing rate for the wound from one or more stored impedance values.

12. The method of claim 1, wherein the electrical current is an AC current.

13. The method of claim 1, wherein the electrical current alternates between a pulsital AC current, and a DC current.

14. The method of claim 1, wherein during the applying step at least one of the three or more electrodes is applied within the physical extent of the wound.

15. A method for promoting the healing of a wound disposed in soft tissue and having a physical extent, comprising the steps for:

providing three or more electrodes for application of electrical current to the soft tissue;

conducting electrical current through the electrodes;

causing one of the electrodes to function as a current source and one or more of the remaining electrodes to function as a current sink; and

switching the function of acting as a current source and as a current sink among the electrodes.

16. A device for promoting the healing of a wound disposed in soft tissue and having a physical extent, comprising:

three or more electrodes; and

control circuitry connected to the three or more electrodes to control the application of electrical current through the electrodes, the control circuitry capable of conducting an electrical current through the three or more electrodes such that one electrode can function

as a current source and one or more of the remaining electrodes can function as a current sink and further capable of switching the function of acting as a current source and as a current sink among the electrodes.

17. The device of claim 16, wherein the control circuitry is further capable of measuring the electrical impedance between the electrode functioning as the current source and the one or more electrodes functioning as current sinks.

18. The device of claim 16, wherein one of the electrodes is adapted to be applied to soft tissue remote from the proximate physical extent of the wound.

19. The device of claim 16, wherein the control circuitry is capable of measuring an electrical impedance value between the electrode functioning as the current source and the one or more electrodes functioning as current sinks.

20. The device of claim 16, wherein the control circuitry is capable of conducting both a pulsital AC current, and a DC current.

21. A device for promoting the healing of a wound disposed in soft tissue and having a physical extent, comprising:

three or more electrodes;

means for conducting electrical current through the electrodes, connected to the three or more electrodes;

means for causing one of the electrodes to function as a current source and one or more of the remaining electrodes to function as a current sink, connected to conducting means; and

means for switching the function of acting as a current source and as a current sink among the electrodes, connected to the causing means.